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Using Argument Structure to Teach New Verbs

in Spanish-speaking English Language Learners

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Using Argument Structure to Teach New Verbs in Spanish-speaking English Language Learners

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Dedication

For Roxanna and our daughters.

Acknowledgements

Thank you, Liz and Lisa, for always telling me I write well and yelling at me to finish. I am grateful for all the knowledge you have given me about this complex and exciting world of bilingual language acquisition. Thank you, Courtney and Terry, for your patience with me.

Abstract

Using Argument Structure to Teach New Verbs

in Spanish-speaking English Language Learners

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Spanish-speaking, English language learning (ELL) preschoolers were taught novel, low frequency verbs in two different conditions, a basic storytelling condition and an explicit argument structure teaching condition. The argument structure teaching condition utilized explicit instruction about argument structure, a linguistic concept that even young children, and presumably children in the early stages of second language acquisition, are sensitive to. This study sought to determine if utilizing argument structure to teach new verbs would yield greater learning in a short amount of time. While many participants learned new verbs, as demonstrated by a receptive pre- and posttest difference, neither condition yielded greater change. Higher English vocabulary scores correlated significantly with greater learning for those children who learned new verbs, while amount of English spoken, total Spanish language scores and Non-word repetition (NWR) task scores did not.

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Chapter 1: Background

English Language Learners

The number of English language learners (ELLs) in school districts across the nation is increasing. The percentage of public-school students in the United States who were ELLs was higher in fall 2015 (9.5 percent, or 4.8 million students) than in fall 2000 (8.1 percent, or 3.8 million students) (National Center for Education Statistics, 2018). Seventy seven percent of these ELL students spoke Spanish as their home language (National Center for Education Statistics, 2018). A special challenge that ELLs face is simultaneously becoming academically successful while they are in the process of learning a new language. Educational achievement in bilingual children is strongly predicted by their school language proficiency (Whiteside, Gooch, & Norbury, 2017), and one of the most important factors for ELLs acquiring school language proficiency is their level of vocabulary knowledge in their second language (L2) (Proctor, Carlo, August, & Snow, 2005; August, Carlo, Dressler, & Snow, 2005). Vocabulary knowledge is closely tied to literacy, an essential skill for acquiring academic success. Bilingual preschool children's Spanish and English vocabulary scores predict word reading skills in English in first grade and beyond (Rinaldi & Paez, 200). Both vocabulary breadth and depth for ELLs correlate with reading comprehension in grades two through five (Silverman, et.al., 2015), and both monolingual English speakers and ELLs in middle and high school continue to reveal a direct effect of increased vocabulary knowledge to increased reading comprehension in school (Reed, Petscher, & Foorman, 2016).

Though the demands for school language proficiency are high already in elementary school, many ELLs are exposed to little English in their community prior to attending kindergarten and are likely to enter school with only basic interpersonal communication skills (BICS; Cummins, 1981) in English. However, for children entering English-only schooling, developing some English language skills before Kindergarten is optimal. Longitudinal studies show that maintaining growth in the home language in addition to learning English supports school success, as Head Start children's language growth in both Spanish and English during the preschool years predicts their within-language, early reading ability, which is the foundation for academic success (Hammer, Lawrence, & Miccio, 2007; Davison, Hammer, & Lawrence, 2011). It is important to understand how we can support English development as children enter school.

The English acquisition trajectory varies from child to child due to the myriad factors that influence language-learning, including experiential differences like age of first exposure and percentage of daily use (Bedore, et al., 2012), as well as summer vacation experiences (Rojas & Iglesias, 2013). ELLs' English growth rates can also be impacted by gender as well as the time of measurement, as learning trajectories do not remain constant and linear across school years or even semesters (Rojas & Iglesias, 2013). In spite of such differences, an important similarity exists: all ELLs rely on the most salient characteristics of their second language to become proficient language users.

According to MacWhinney's Unified Competition Model (2002, 2005) language *cues,* which can vary in *reliability* and *availability* are held within the *storage* of our linguistic knowledge. More salient *cues* (due to characteristics like frequency, stability and

phono-acoustic properties to name a few) are easier for children to attend to and utilize for language learning. Languages differ in the availability and reliability of cues. For example, languages vary syntactically in terms of word order cues. Some languages require more consistency with how elements are ordered in a sentence, while others allow for more flexibility. A bilingual child speaking a language pair that includes one language with consistent syntactical rules and another language that is more flexible might make syntactical errors based on the relative strength of the word order cues of those languages. He might maintain a strict word order in a language that allows for more flexibility, or, if he is more proficient in the language that allows for more flexibility, that flexible cue strength might influence him to make order errors in the language that requires more consistent syntactical structure. All language components (e.g. phonology, morphology, syntax, semantics, and pragmatics) offer cues that inform speakers' learning. Every bilingual will have internal knowledge of cues from both of their languages, which will either work symbiotically to reinforce language knowledge or work in opposition to each other to promote language errors. Both the opposition and symbiosis are witnessed in different aspects of verb usage.

A more recent iteration of this model is the Unified Model (MacWhinney, 2012), which was proposed specifically to account for second language learning. Of particular interest for the current work, the key concept of *chunking* was added to the model and helps us understand the types of cues that might be salient to learners. The notion of chunking highlights that as learners gain proficiency, the size of linguistic chunk to which they attend may change. The original Competition model focused on Indo-European and Ural-Altaic

languages, all which have inflectional tools that indicate person, number and gender (MacWhinney & Bates, 1989). However, some languages (e.g. Mandarin Chinese) do not have inflectional systems; therefore, their speakers and listeners must focus on other cues to interpret meaning. For example, Li, Bates & MacWhinney (1993) found that Chinese speakers use animacy as a cue for sentence interpretation, as inflectional morphology is not an available cue. Even in language that do present verb and noun morphology, children often start with utterance level chunks prior to processing grammatical details (Tomasello, 2003; Gobet, 2005; MacWhinney, 2012). Thus, larger grained chunks such as a verb and its arguments might prove salient early in acquisition.

The Basics of Argument Structure

To accurately express verbs and their meanings, one must use the appropriate argument structure. Argument structure refers to the number and type of syntactical elements necessary to express a verb meaning correctly, as it corresponds to the event being described. For example, to express the verb, *provide,* correctly in English when talking about an event of *transfer*, there must be a subject (someone who provides), an object (something which is provided) and an indirect object (a recipient of that which is provided). The sentence, *The school provided the children with free notebooks for class,* includes the three necessary arguments to correctly express *provide* in the context of that event.

Argument structure varies in complexity; the more arguments required to express the syntactic relationships demanded by the verb and corresponding event, the more complex the structure. The least complex argument structure, the intransitive, requires only one argument, while transitive structures require two arguments, and ditransitive, the most complex argument structure, requires three arguments to correctly express the verb

meaning (see Table 1). In an intransitive sentence, the one argument required is called the *subject.* All English sentences must minimally include a subject to be grammatically correct. In transitive constructions, the second argument included is commonly called the *object*; it is the recipient of the subject's action (e.g. He threw *the ball.*). In a ditransitive construction, the third argument, or element included, is often called the *indirect object*. One of the most common ditransitive constructions uses the word *give.* In the sentence, *I gave him money*, the indirect object is *him*.

Table 1: Argument Structure Types

Argument structure type	**Required elements**	**Example**
Intransitive: requires one argument only for correct grammatical expression.	Subj, verb	He *woke up*.
Transitive: requires two arguments for correct grammatical expression.	Subj, verb object	They *held* the toy cars.
Ditransitive: Requires three arguments for correct grammatical expression	Subj, verb, direct or indirect object	She *told* the clerk, "A hamburger please."

Argument Structure: Arbitrary or Inherent? Variable or Universal?

Cross linguistically, syntactical constructions are inherently connected to argument structure rules, since argument structure naturally frequently has some basis in universally perceptible life-events. There are "strong consistencies in the number of arguments associated with verbs with certain kinds of meanings, and in the typical mapping of these

arguments to syntactic roles (Bowerman & Brown, 2008; p. 3).” In bilingual speakers, evidence of these similarities may show up in the elements that are produced as parts of code switched utterances. For example, bilingual speakers who codeswitch most commonly insert nouns from their Embedded Language (EL), or their language with less grammatical strength, into clauses of the Matrix Language (ML). The EL nouns are codeswitched without a production cost, indicating the syntactic frame is intact in both languages. The nouns do not dictate the thematic role, but operate in that role whether produced in the EL or ML (Myers-Scotton & Jake, 2013).

One salient and common example of how argument structure represents the connection between a physical event structure and an event’s participants is in *causative* event representation (Levin, 2015). Verbs that semantically denote causality require the thematic roles of an *agent* and an *object*. The agent is the participant who makes the action occur, while the object is the recipient of that action. For example, a common causative verb is *hit.* In the phrase, *Sally hit Ben,* Sally is the agent, or the hitter, and Ben is the object, the recipient of the hitting action. From a syntactical standpoint, the presence of those two participants in the life event demands that each participant be denoted by a noun phrase (NP). Similarly, as mentioned, in creating a dative construction using the English verb, *give,* one typically must include an agent, an object and an indirect object with corresponding NPs for each role (e.g. *I gave him money.)*

That is not to say that there is absolute universality with argument structure. There are variations. Some languages, rather than using an indirect object to represent the person receiving the item given, use a double object construction to denote both the recipient and the item given. Though the syntactic parts of speech in such languages differs from English, the use of three different noun phrases (NPs) is still required to denote all of the entities involved in the giving; those constructions, like English also include one *giver,* one

recipient and one item that is *transferred* (Haspelmath, 2015). Nonetheless, despite known cross-linguistic variation, there is widespread agreement about the principle of the semantic-syntactic link. Pinker (1991) calls the underlying mapping of entities involved in an event to syntax *linking rules;* Lidz calls it mapping principles (Lidz et al., 2003), and Goldberg refers to it as argument structure constructions (Goldberg, 1995, 2006). These all elucidate how argument structure, particularly for highly lexicalized verbs is more naturally connected to physical events that occur with real-life events, or frames.

Argument Structure Variations within Individual Verbs

In addition to the cross-linguistic variation, even individual verbs within languages can express more than one specific meaning. The different ways that individual verbs can take on variable argument structures are called *alternations.* The most common alternation is the preferred argument structure and it serves as the basis for understanding the less common or less complete alternations. For example, even though Levin (2015) demonstrates the (frequently) inherent requirement for having two entities in a causative event, it is possible for common verbs of causality, such as *broke,* to be used in a non-transitive alternation such as, *The generator broke.* In addition, though the most common alternation of the verb, *throw,* is ditransitive, or one that includes three entities (one who throws, that which is thrown, the recipient of the thrown item), it is possible to use *throw* in both transitive and intransitive alternations. A baseball game announcer might ask, "Who's *throwing* tonight?" This would be an example of an intransitive construction, as the only argument included is the subject, or the player pitching. We can also identify which celebrity might "*throw* the first pitch," without identifying who might catch that pitch. This would be an example of a transitive construction in which only the subject and

direct object are included as arguments. Preferred argument structure provides a reliable cue to expected sentence structure for deciphering verb meaning.

Young Monolingual English Speakers Attend to Arguments

In spite of cross-linguistic differences and the existence of verb alternations, it seems that in learning new verbs, children pay attention much more to the *theta roles* (the roles that the agents and patients play) associated with the preferred argument structure than to the morphological structures associated with such constructions (Lidz, Gleitman, & Gleitman, 2003). Children pay attention to the "entities" that exist in the physical world and ascribe noun phrases to them when describing their relationship to one another with a verb. This attention to the conceptual roles (e.g., who does what to whom) might act as the "architectural centerpiece of the sentence" and support children in early grammatical learning (Pulverman, Hirsch-Pasek, Golinkoff, Pruden, & Salkind, 2006, p. 134).

Even children younger than 2 years of age understand the idea of *structural mapping* of life events onto syntax, or the need for the same number of NPs as thematic roles. When children hear novel verbs in sentences including two nouns, they direct their attention to pictures of transitive events, but when they hear novel verbs with only one noun, they do not look at pictures of transitive events (Yuan, Fisher, & Snedeker 2012). When presented with novel verbs, three-year-old children consistently link transitive sentences with causative rather than non-causative actions (Naigles 1990; Hirsh-Pasek, Golinkoff, & Naigles, 1996; Yuan and Fisher 2009). In addition, monolingual children as young as age three already possess a basic understanding of thematic categories (e.g. subject/object) and the syntactic positions they belong in. For example, the subject in English is preverbal, while the object is post verbal. Children can interpret novel transitive sentences even when the roles of the participants are switched within the same construction

using the same verb. They also can connect the subject position in intransitive constructions to an agent (Fernandes et al. 2006).

L2 Learners Attend to Arguments

In the Unified Model (2012), MacWhinney proposes that children who have been entrenched in their L1 for years and are then exposed to a second language, have not had the experience to develop resonance in L2. As a result, in learning L2, children need to rely on additional learning strategies they did not need to incorporate into their subset of L1 acquisition strategies. These learning strategies need to optimize input, allow for L2 resonance and maintain the chunks of L2 input. Morrett and MacWhinney (2012) demonstrated that bilinguals do in fact rely on cues such as animacy and syntactic positions (such as preverbal subjects in English) to process language in their weaker language.

MacWhinney suggests that self-organizing maps (SOMs) are created as a result of resonance, and this holds true at the construction level. Construction maps can be overlaid onto the lexical maps children already have by using item based learning at first, such that individual predicates are linked to specific constructions (e.g. the verb *pour* is linked to the *pourer + item poured + receptacle* construction). This links closely with Tomasello's *verb island* hypothesis, which suggests that children in early language acquisition utilize, "verb islands" (1992, 2000) in order to develop expressive verb use. He described these verb islands as highly routinized, utterance-level constructions used as whole units to describe a life experience. Tomasello supposed that when children learn a new verb, they only use it within the context it was first (or most frequently) presented, and that context alone. For example, a child might learn, *catch the ball*, and utilize that phrase in different contexts, but not say phrases like *catch the key* (a less-frequent phrase with the verb), or *catch a cold* (an idiomatic use of the verb) until after a period of practicing the verb within the initially

learned verb island. He purported that children cannot initially generalize verb usage beyond the first familiar syntactical construction, which also means that their attention to the verb exists at a phrasal level.

Tomasello's verb island hypothesis is much in line with how MacWhinney describes *chunking*, which is the use of language chunks to increase L2 fluency. Chunking allows L2 learners to retrieve memorized construction chunks and manipulate them to create new constructions on the spot. For example, a person might learn the phrase *quisiera comprar* (I would like to buy), and be able to use it to complete a sentence about any number of items desired to be purchased. L2 learners develop fluency by practicing such chunks and "filling" the arguments the set up. The use of chunking at the construction level can explain why school-aged, Spanish-speaking ELLs in the initial second language acquisition process do not omit key elements of verb argument structure. Four- to six-year-old Spanish speaking ELLs perform similarly to English monolingual children in terms of subject inclusion, even though subject marking rules differ cross-linguistically (Gutiérrez-Clellen, Simon-Cereijido, & Wagner 2008). Older school-aged Spanish-speaking ELLs (7-9 years old) rarely make argument structure errors; they do not omit required arguments within spontaneous narratives even if they are in the very early stages of English acquisition (unpublished data, Boerger). They create complete constructions in their narratives while being highly ungrammatical with verb morphology, suggesting they are more attentive to larger grain chunks than smaller cues, and more able to practice them.

The current study is designed to determine if providing explicit instruction about chunks at the construction (or argument structure) level helps children to learn conceptual information about new verbs. If children naturally attend to cues that occur more frequently and reliably as well as to larger linguistic chunks to create the resonance necessary to learn

a second language, it is possible that explicit use of argument structure cues to learn new vocabulary might be a powerful teaching tool.

Chapter 2: Methods

Participant Recruitment

Twenty kindergarten and preschool children were recruited from Spanish-speaking schools in the Boulder, Colorado area. The first four participants were recruited from Boulder Valley School District from flyers hung in the front hallways of three different schools. The subject recruitment process yielded few possible participants, so the researcher completed a new recruitment request through The Boulder Valley Head Start program. The following sixteen subjects were recruited from two Boulder Valley Head Start sites. All children were Spanish-English bilingual speakers on the Spanish dominant end of the bilingual continuum according to a parent interview. Parents reported that prior to entering the kindergarten classroom, the children heard and used Spanish more than 60% of the time (see Table 2). All children were identified as Hispanic by their parents, and neither the children's parents nor the classroom teacher expressed any concerns about the children's language development. Parent concern was determined during the parent interview process, and teacher concern was addressed informally at time of recruitment. None of the recruited participants were being considered for a special education evaluation for learning challenges, nor had active Individualized Education Plans. All the participants passed the school-based hearing and vision screenings according to record review. The participants all qualified for free-reduced lunch or for Head Start services, which are provided to families who live below the poverty guidelines as established by the Federal Register by the Department of Health and Human Services.

Table 2: Participants

	Group 1 (n = 10) Storytelling First		Group 2 (n = 10) Argument Structure First		Overall
	Verbset1 first (devour, scrub, repair)	Verbset2 first (damage, sketch, gulp)	Verbset1 first (devour, scrub, repair)	Verbset2 first (damage, sketch, gulp)	
Age in months	67	65	65	64	65
% English use	19	29	15	30	23
PPVT-4 standard scores	78	79	69	77	76
Overall BESA Spanish raw scores	59	51	59	46	54
NWR Spanish scores PPC	55	50	46	46	49

PPVT-4=Peabody Picture Vocabulary Test-4; BESA=Bilingual English Spanish Assessment; NWR=Non-word Repetition; PPC=Percent Phonemes Correct

IRB Approval and Consent Process

This study, numbered 2014-15-0016, was approved by University of Texas at Austin for the duration of data collection and analysis. Parents of the participants signed informed consent, which was provided to them in both Spanish and English. The participants' confidential information was kept in a locked cabinet in a locked office in the Speech, Language and Hearing Sciences Department at the University of Colorado at Boulder, Room 276.

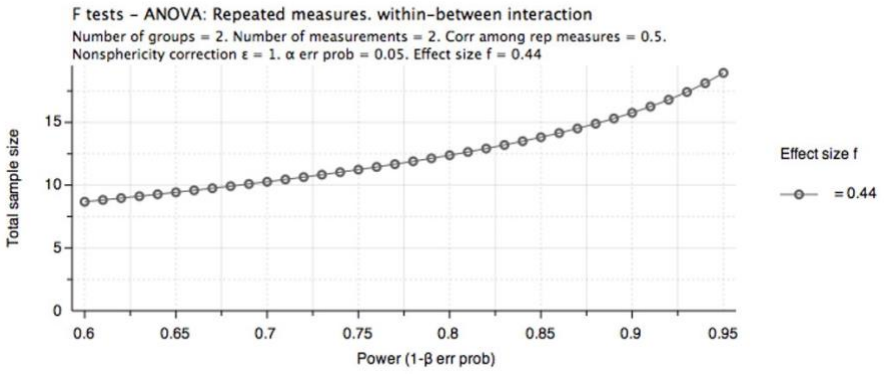
Power Analysis

An analysis of Quick Incidental Learning (QUIL) task research guided the decision regarding what effect size would be reasonable to expect and, subsequently, how many participants to enroll in the study. QUIL tasks, in which children hear about 5 tokens of the target words to learn (across one or two sessions), show that there is little effect for verb learning in young children, aged 3-5 (Rice et al. 1990; Rice & Woodsmall, 1998), and that verb-learning effects are low in 6-8 year olds (Oetting, Rice, & Swank, 1995). These tasks, however, do show moderate effect sizes for learning new object and attribute words. In QUIL tasks, there is no explicit instruction of words; children's incidental learning is evaluated after short, natural exposures to new words. QUIL tasks are limited to two presentation occasions with multiple new target words. The assumption for the current study was that the presentations across three sessions combined with the explicit instruction in the Argument Structure Condition as well as only presenting one target word per presentation, would increase the learnability of the target words.

An assumption was that the participants would perform at chance on the pretests. At the group level, the pretest scores were at chance for both sets of verbs. The hypothesis was that children in the Storytelling Condition might learn some of the target verbs, but

due to the explicit nature of the instruction in the Argument Structure task, which is tied to natural learning processes and skills that transfer cross-linguistically, children would learn more in the Argument Structure condition. To determine the required participant number, the assumptions of chance were made at the individual level, assuming each child would earn a score of 1 on the pretest, increase their scores by 1 on the Storytelling posttest and 2 on the Argument Structure posttest. An effect size calculation of the differences between the mean changes from pretest to posttest of the two conditions shows a value of .44. Assuming this effect size, a G-power analysis required 20 participants to yield such an effect size. See Figure 1.

Figure 1: G-Power Effect Size Calculation for Effect Size .44



Treatment Groups

The children were randomly assigned into two different treatment orders that were further counterbalanced by verb set. The design was a fully crossed experimental design

in order to control for learning effects due to the treatment order and for possible inequity or differences of verb sets, in order to analyze the impact of the treatment type (Argument Structure vs. Storytelling). See Figure 2 for an overview of the group design.

One treatment group was taught verbs in the Storytelling condition first. Within the Storytelling first group, half of the participants were taught verbs 1-3 in that Storytelling Condition, the other was taught verbs 4-6. The other group received the Argument Structure condition first, with half of the group learning verbs 1-3 first, and the other half learning verbs 4-6. (Table 3 contains session completion details). The groups were analyzed and balanced for similarity by completing a t-test on age and language experience. Both groups then received either the Augument structure or Storytelling treatment with the other verbset. Participants were randomly assigned to the treatment groups.

Figure 2: Group Design

	Argument Structure first (*n = 10*)	Storytelling first (*n = 10*)
Verbset first tested	*Verbset 1* *(n=5)*	*Verbset 2* *(n=5)*
Verbset first tested	*Verbset 2* *(n=5)*	*Verbset 1* *(n=5)*

Table 3: Session Completion Roster

	ID	High Freq & Pretest 1	Posttest 1	Pretest 2	Posttest 2	PPVT	NWR	BESA sem	BESA syn
Storytell1 verbset1	1	1	2	3	4	5	5	1	2
	2	1	2	2	3	2	1	1	1
	3	1	2	3	4	4	3	1	2
	4	1	2	2	3	3	2	1	1
	5	1	2	2	3	2	1	1	1
ArgStruct1 verbset1	6	1	2	3	4	3	4	1	2
	7	1	2	3	4	4	2	1	1
	8	1	2	2	3	2	1	1	1
	9	1	2	2	3	2	3	1	1
	10	1	2	2	3	2	3	1	1
Storytell1 verbset2	11	2	3	3	4	2	1	3	3
	12	1	2	2	3	2	1	1	1
	13	1	2	2	3	2	2	1	1
	14	1	2	2	3	2	1	1	1
	15	1	2	2	3	2	1	1	1
Arg Struct1 verbset2	16	1	2	2	3	2	1	1	1
	17	1	2	2	3	2	1	1	1
	18	1	2	2	3	1	1	1	1
	19	2	3	3	4	2	1	2	2
	20	1	2	2	3	1	1	2	2

Treatment Setting and Session Description

The first four participants were seen in their homes. The researcher found a quiet table to sit at with the children. A parent was usually within earshot but did not participate in the treatments. These initial four participants were seen for up to five sessions of shorter duration due to needing to schedule the sessions after work hours and before family dinners. After the initial four participants, the researcher secured permission to recruit and treat preschool students on-site at their Head Start locations during their school day. All children were seen in the morning for either three or four sessions, depending on the scheduling and the individual child's energy/attention level. Children were all seen individually for each of their sessions. The testing and the treatment were conducted in a private room in the Head Start building. Because the researcher could spend longer periods of uninterrupted time with these children during their school day, the study was conducted in three sessions, with the exception of two children who completed the NWR task before they started the rest of the study protocol.

The initial ordering of the first session was consistent across children (with the two exceptions of the two participants who completed the NWR task in a single session before they initiated the treatment sessions). All children started with the high frequency verb warm up activity in the first session, followed by the experimental pre-testing and initial teaching task to maximize attention to the experimental task. Task order following the initial three activities and in subsequent sessions varied between the children depending on multiple factors including scheduling differences, temperament differences and behavioral factors. All pretests and posttests for the treatment conditions were given on different days; children received the two treatments for each condition on two different days. Because the majority of the subjects were seen in their school setting, the researcher was subject to interruptions including but not limited to fire alarms, unexpected class celebrations and

parents' late arrival. Some participants were less comfortable interacting in English; in these cases, the researcher chose to administer the BESA before the PPVT. In addition, some children's temperaments led them to be more reticent to complete expressive language tasks or to try tasks that were difficult; in those cases, the researcher chose to delay the NWR task. Some children maintained attention and energy levels well enough to complete more of the testing tasks in one day; they even requested to do more activities. The researcher, in order to continue building rapport with the children allowed this. Each of these decisions was based upon the researcher's years of clinical experience with young children with the goal of obtaining the most optimal outcomes on the standardized language tasks in order to obtain the best estimate children's language knowledge at the time of testing.

Seventeen of the twenty participants completed the BESA semantics subtest on the first day, while three of them completed it on the second day. Fourteen of the subjects completed the BESA syntax subtest on the first day, while five completed it on the second day, and one completed it on third. There was more variation on when the PPVT and the NWR tasks were administered. Two children completed the PPVT on the first day of the study. Twelve completed the PPVT on the second day, three completed it on the third day, another two on the fourth, and one completed it on day five. The subject who completed five sessions was the first subject in the study who had family scheduling constraints and needed more sessions to complete the protocol. Two children completed only the NWR task on their first day. Twelve children completed the NWR task on the first day of testing, three on the second, three on the third day, and one each on the fourth and the fifth day. Due to the fully crossed nature of the design, each participant had a tracking form with the order of conditions and the verb order designated prior to each session; this ensured the correct conditions and verbs were administered to each participant. (See Appendix A.)

Procedures

All procedures were conducted by the principal investigator (PI) on the project. The treatment tasks were administered on the PI's computer, but the stories in both conditions were presented on the computer by an audiofile recording attached to the powerpoint to ensure treatment fidelity. The PI recorded the non-word repetition task for later analysis; no other recordings were made. The pre- and posttests were 4 picture forced choice receptive tasks and were scored as correct or incorrect on-line and administered via a powerpoint presentation on the computer.

High frequency verb task: Initially, all children participated in a high frequency verb activity in which target high frequency verbs were presented three times each within a simple sequencing task activity. These high frequency presentations mirrored the argument structures in which the correlate low frequency verbs were presented in subsequent teaching conditions. The high frequency verbs were verbs typically used over the course of a day in kindergarten. They included: *eat, wash, fix, break, draw* and *drink.* While the within-participants design of this study worked to ameliorate the effects of different language experiences, this high frequency verb exposure activity further equalized the participants' exposure to the common verbs to decrease the impact of different language exposure on the new verb learning. Of the high frequency verbs chosen, five of them (eat, wash, break, draw and drink) were verbs that are found in the early vocabulary of young monolingual, English children, according to the MacArthur-Bates Communicative Development Inventory (Fenson, et. al; MacArthur-Bates CDI; 2007). The sixth verb, *fix,* was chosen as a lexical opposite for *break.* None of them was what is called a "light" verb, or a verb that can be used nonspecifically because it has little semantic depth (Bloom, Lifter, & Hafitz, 1980). Examples of English light verbs are *go, take, make.* These light verbs generally are accompanied with a noun phrase to derive meaning. In addition,

none of the verbs were "mental state" verbs, or verbs that address concepts of the mind that are not visible, such as *think, believe, hope.*

Low frequency pretest and verb learning task: Following the high frequency verb exposure activity, children completed a pretest of three low frequency verbs which were correlates to the high frequency verbs demonstrated in the high frequency verb task. See Appendix B for the complete set of pre- and posttest stimuli. The final tested set of low frequency verbs were *devour, scrub, repair, damage, sketch* and *gulp.* None of these verbs is among the top three hundred and thirty English verbs used (http://www.englishcenter.cz; 2005) Once the pretest was complete, the participants began with exposure to their three pretest, low frequency verbs in one of two conditions. They were provided two exposures to each story, with one story per verb. The first condition, the Storytelling Condition, presented the low frequency target verbs embedded into rich contextual information. This imitated the "business as usual" approach to language and literacy, in which teachers conduct story time with rich language sources from which children can fast map new words into their lexicon.

The second condition, the Argument Structure condition, utilized the same materials from the Storytelling condition but explicitly taught the low frequency verbs by highlighting their connection them to their high frequency verb correlates, including the notion of matching argument structure. In each condition, the children received a total of five exposures to the low frequency target verbs within the same kinds of constructions.

Each target verb was presented in the story in three different forms; 1) the infinitive form (3 times each) – *to devour, to scrub, to repair, to damage, to sketch, to gulp* 2) the third person present progressive form (1 time each) – *is devouring, is scrubbing, is repairing, is destroying, is sketching, is gulping* and 3) the third person singular form (1 time) – *devours, scrubs, damages, repairs, sketches gulps*. Because each story had 5 verb

presentations, and the participants heard/watched each story twice, the participants heard each verb a total of ten times between pre- and posttest. (See Table 4 for low frequency verb learning task session example for both conditions.) See Appendix C for examples of all scripts. The Argument Structure scripts was distinct from the Storytelling scripts in two ways. First, they utilized explicit, metalinguistic instruction about the objective of the activity (e.g. "We are going to learn some new words today using words we already know to help us."). Second, they explicitly connected high frequency verbs to the low frequency verbs being taught (e.g. "Instead of using the word *eat*, we are going to use a new word."). Finally, in the Argument Structure Condition, attention was drawn to how the high frequency verb could be replaced by the low frequency verb in the same construction (e.g. "We can say, "Here the alligator decided to eat all the jellybeans." Or we can say, "Here the alligator decided to devour all the yellow jellybeans!"). See Table 4 for example. For both conditions, the children were told, "Now we are going to look at some stories on the computer." The Storytelling task simply started right in with the title of the story and the narrative, while the Argument Structure task also included the explicit teaching instructions. See Appendix C for complete scripts in both conditions for all verbs.

Table 4: Low Frequency Verb Activity Script Example

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Alligator Who Loved Most Jellybeans". One day, an alligator found a big bowl of jellybeans. He didn't know what they were, so he took one yellow jellybean out of the bowl and he smelled it. Yum. The yellow one smelled sweet. He decided to **devour** all the	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of an alligator who is eating lots of jellybeans, but instead of saying the word, "eat", we are going to use a new word. We can say, "Here the alligator decided to eat all

yellow jellybeans. Next he took out a red jellybean and he smelled it. Yum. The red one smelled sweet too. The alligator decided to **devour** all the red jellybeans. Next, the alligator took out a green jellybean and smelled it. Yum. The green one smelled sweet too! He decided to **devour** all the green jellybeans. The next jellybean the alligator took out was brown. It smelled sweet like the other jellybeans, but when he was **devouring** all the brown jellybeans, he noticed they tasted like coffee. Ew! They were not sweet! Now, the alligator never **devours** brown jellybeans anymore.	the jellybeans." Or we can say, "Here the alligator decided to **devour** all the yellow jellybeans!" He likes them because they are sweet. Here the alligator decided to **devour** all the red jellybeans. They are sweet too. Here, we can say he decided to eat the green jellybeans, or we can say he decided to **devour** the green jellybeans. We can make the same kind of sentence. Here, the alligator was **devouring** the brown jellybeans, but they tasted like coffee! Ew! Do you think the alligator **devours** the brown jellybeans anymore? No, he does not eat the brown ones!

Low frequency verb comprehension posttest: After being exposed to three low frequency verbs in a two-session, learning task condition (Storytelling condition or Argument Structure teaching condition) which exposed children to each verb 10 times, each participant completed a comprehension test for those three verbs (each subject then switched conditions and was exposed to the remaining three verbs, followed by another low frequency verb comprehension test). The verbs were presented in a counterbalanced order across each of the teaching tasks. The pre- and posttest performance was scored in terms of correct/incorrect answers on an online scoring form (See Appendices D and E). All the participants completed the verb comprehension posttests in the same session as the second administration of the corresponding treatment condition of those verbs. The was a variety in how much time passed between treatment condition administration, particularly with the first four subjects. Due to the need to travel to participants' homes and to work

around scheduling challenges, the first four children completed the pretest comprehension test and the first administration of the treatment days before the second administration of the treatment and the posttest. The majority of the remaining sixteen subjects completed the entire study protocol in between 3 and 7 days. Time between treatment administration varied based on factors like children's attendance in school and unanticipated school schedule changes.

Measures

Comprehension Tests: The comprehension tests consisted of a series of three questions that asked the participants to identify a target low frequency verb from a field of four pictures. (See Appendix A for pre and posttest stimuli.) The participants were shown four pictures in a grid on a powerpoint slide and told, "Look at all of the pictures. Show me (*to devour).*" The test administrator pointed to each of the four pictures after instructing the participant to do so and before asking the child to show the desired picture. The pictures consisted of the same materials used to make the storybooks, but used different characters or materials to demonstrate the low frequency verb. For example, in the first script, the alligator devours jellybeans. In the comprehension test, a lion was shown eating strawberries. The other three pictures from the field of four were also made from the same set of materials, but depicted actions that are not akin to the target verbs. (See Table 5 for a list of foils corresponding to each of the target verbs). The comprehension test plates for the target verbs were tested for content validity on two four-year old children, one monolingual English speaker, and one bilingual English Spanish speaker. The children responded expressively with the target high frequency verbs (eat, drink, break, fix, draw,wash) with 100% accuracy for all six of the verbs when asked, "What is (the elephant) doing?"

Table 5: List of Non-Target Verbs Pictured in Comprehension Test

Target Verb	Non-Target Verb Plates
Gulp	Brush (teeth)
	Throw
	Close
Damage	Kick
	Cook
	Smell
Devour	Water
	Call
	Dress
Scrub	Pay
	Cut
	Brush (hair)
Sketch	Ride
	Sleep
	Blow
Repair	Push
	Read
	Play

The initial set of proposed target verbs included four cognates, devour/devorar, illustrate/ilustrar, destroy/destruir, and repair/reparar. None of these four cognates is high frequency in Spanish as indicated above; however, illustrate/ilustrar and destroy/destruir, while low frequency in both English and Spanish, were both deemed inappropriate targets and substituted. It is common practice to talk about illustrators, illustrations and authors in the school setting, thereby potentially making illustrate a high frequency verb in the lives of the participants. The target verb was changed to sketch, not due to its cognate status, but due to its potential frequency of use in the classroom. It made sense to change destroy to damage, as damage is a better semantic match to the high frequency word, *break.* One can break or damage something without completely destroying it. It also easier to depict in a semantically accurate way, as it is not so absolute and can be shown in degrees of damage. As mentioned, the two remaining cognates, devour and repair, are low frequency in both languages; therefore, they remained in the list of target verbs. Both have high frequency correlates (eat/comer for devour/devorar and fix/arreglar for repair/reparar). The stories for both tasks were created with the six target verbs devour, repair, scrub, damage, gulp and sketch and were audiorecorded onto power point presentations by a speaker who was unfamiliar with the purpose of the study.

The set of foils was also further developed from an initial set of eleven verbs that were to appear no more than two times across the comprehension tests in different positions on the test plates. A new set of 18 foils (listed in Table 5) was created so that each one was only used once. This was to ensure that repeated foils did not bias the children towards choosing them. These changes occurred prior to the study implementation, and all children received the same pre- and posttests, as well as the same stimuli for the Argument Structure and Storytelling tasks. Initially, the pre and posttesting for both verb sets were maintained

on one powerpoint, but later the pre and post tests for each verb set were separated from the main powerpoint for ease of administration during testing.

Expressive measures for verb learning: At the time the study was proposed, it was suggested that in the event of the participants reaching ceiling on the verb learning, an expressive task should be incorporated. This would be implemented in order to obtain information about phonological retention. The task was designed as a choice between three possible words to choose from including (the low frequency target verb, a verb that began with the same phoneme as the low frequency target verb, and another low frequency verb). This task was designed to be administered prior to the posttest under each condition.

The PI did not incorporate this into the first four subjects in 2015 (001, 003, 006 and 007) due to oversight. Samples of these response sheets are shown in Appendix D. The task was attempted in 2017 for participants 002, 009, 010, 011, 015, 016 even though the first four subjects had not reached ceiling. The children were not able to complete the task with any comprehensible or approximated phonological output and continued to not reach ceiling on the receptive task, thus the expressive task was not administered for the remaining children. All of the remaining children used the response sheet seen in Appendix E.

Language Testing: In addition to the low frequency verb comprehension pre- and posttests, children completed the Peabody Picture Vocabulary Test-4 (PPVT-4), the Semantics and Syntax subtests of the Bilingual English Spanish Assessment (BESA), and a non-word repetition (NWR) task in Spanish to provide a measure of phonological working memory (PWM).

Chapter 3: Results

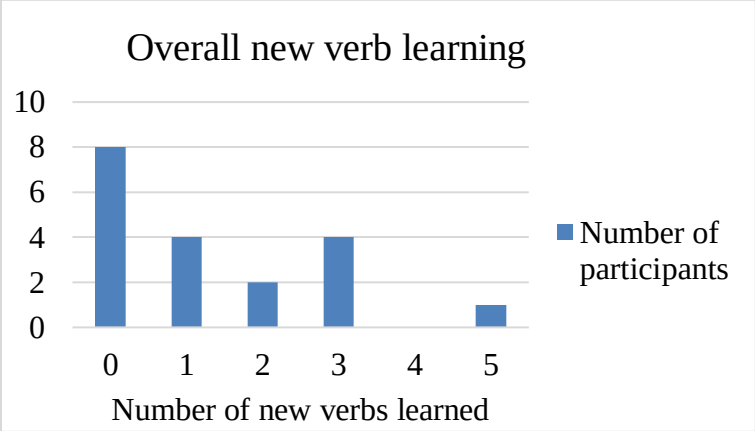
Overall, the data showed that the children learned new verbs in general, as the participants demonstrated pre- to posttest changes, and above chance level response at posttest. Across all participants, the learning average was about .65 new verbs, and the rate was similar by condition. See Table 6.

Table 6: Pre- and Posttest Average Change Rate by Condition

Condition	Average change
Storytelling	.75
Argument Structure	.55

Though there was an overall change from pre- to posttest, 8 individuals did not learn any new verbs (See Figure 3). Only one participant scored one point lower overall than his original pretest scores combined. Eleven participants learned at least one new verb. Of the four participants who earned a standard score within average range for the monolingual English normative sample on the PPVT, all of them learned at least a new verb. One of the participants learned one new verb, one learned two new verbs, two of them learned three new verbs and one child learned five new verbs.

Figure 3: Verb Learning Totals by Number of Participants



A two way repeated measures ANOVA was conducted to examine possible differences related to the two interventions. Recall that all children completed the exercises with both verb sets (verbs 1-3 and verbs 4-6) and completed treatment in both conditions (Storytelling and Argument Structure). Children differed in which condition they were taught first, as well as which verb set first. Within-subject factors were the two pretests and two posttests. Each subject completed a pretest for three verbs, a treatment teaching those verbs and a posttest for those three verbs. Each participant then completed a second pretest for a second set of verbs, a treatment for those three verbs and a posttest for those three verbs. Between participant factors were the intervention order (Argument Structure first and Storytelling first) and verb set order (Verb set 1: devour, scrub, repair and Verb set 2: damage, sketch, gulp). Box's test of equality of covariance matrices, which tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across group was non-significant, $p = .779$. Thus, the assumption of equal variances among the factors was met. Results of the repeated measures ANOVA demonstrated a main effect for Time, $F(1,16) = 12.255$, $p = .003$, $\eta_p^2 = .434$, a moderate

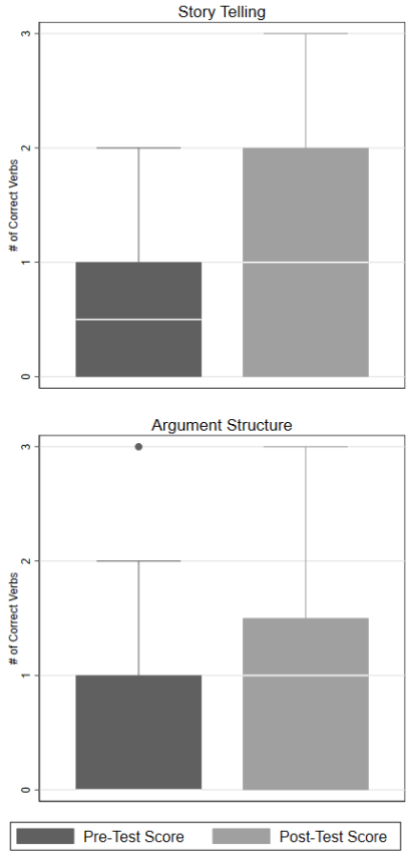
effect size (Cohen, Cohen, West & Aiken, 2003). Children's average pretest scores across the two verb sets were .525 (of a possible 3 for each of the two pretests, or 6 total). Their average scores at posttest were 1.15. There were no significant differences for Intervention Order $F(1,16) = .108$, $p = .746$, $\eta_p^2 = .007$; for Verb set $F(1,16) = .681$, $p = .422$, $\eta_p^2 = .041$, or Intervention Type $F(1,16) = 2.347$, $p = .145$, $\eta_p^2 = .128$. There were no significant interactions with any of the factors.

Though the initial baselines at the pretests were different for the treatment conditions, the rate of learning was similar between pretest and posttest for both conditions, and both baselines were at chance level across the groups. See Table 7 for average correct response rates across the groups on the comprehension tests and Figure 4 for correct responses on the pre- and posttests by condition.

Table 7: Average Correct Response Rates on Comprehension Tests

	Pretest1 *n=10*	Pretest2 *n=10*	Postest1 *n=10*	Posttest2 *n=10*	Average Change
Argument Structure	.4	.4	1.0	.9	.55
Storytelling	.6	.7	1.2	1.5	.75

Figure 4: Pre- and Posttest Comprehension Scores In Both Treatment Conditions



Bivariate correlations were conducted to examine associations between children's gain scores, age, English exposure, language specific performance, and short term phonological memory. Table 9 displays the correlation matrix. There were significant bivariate correlations between children's scores on the PPVT in English and their gain scores, $r(20) = .444$, $p = .05$. No other variables were associated with their gain scores. However, children's Spanish BESA raw scores were negatively associated with percent exposure to English, $r(20) = -.669$, $p = .001$.

To understand how children's language knowledge may have influenced performance on the task the children's overall change scores (or learning scores) were

summed and a bivariate analysis was completed between children's change scores and their scores on overall Spanish language test scores on the BESA (p=.71), English use during the week (p=.45), NWR task scores (.20), and scores on the PPVT (p=.05). The only significant correlation between any individual child factors measured and children's low frequency verb learning was their score on the PPVT, an English vocabulary test. See Table 8.

Table 8: Bivariate Association Between Change in Low Frequency Verb Knowledge and Participant Language Characteristics

	Change	BESA Score Spanish	% English spoken	PPVT	NWR
Change	1.00				
BESA Score Spanish	.114	1.00			
% English spoken	.190	-.669*	1.00		
PPVT SS	.4434*	-.115	.389	1.00	
NWR	-.279	-.113	.374	.112	1.00

Correlation of PPVT to change in low frequency verb knowledge is significant at p<.05

Correlation of English use during the week and Language Scores in Spanish is p<.001

Table Note: BESA = Bilingual English Spanish Assessment; PPVT SS = Peabody Picture Vocabulary Tests Standard Score; NWR = Non Word Repetition

Chapter 4: Discussion

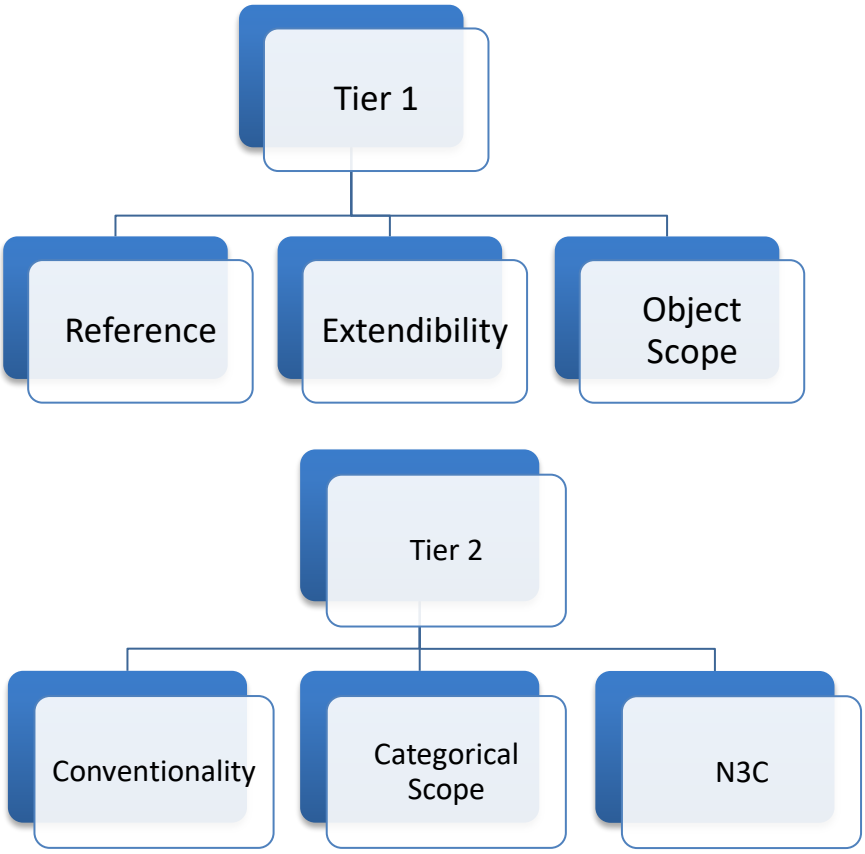
The purpose of this study was to understand the extent to which children who are early in the English acquisition process can leverage attention to argument structure chunks to learn new verbs in English. The rationale for this question was that verbs are central to building vocabulary, and among the verbs that children frequently use, there are common argument structures across languages. Additionally, theoretical models of language acquisition, as well as second language acquisition models, highlight the use of construction chunking, both receptively and expressively for creating mental maps, as well as gaining fluency (Gobet, 2005; Tomasello, 2003; MacWhinney, 2012). Making the connections of argument structure explicit for children while presenting repeated sources of chunked input might speed acquisition of such forms relative to the more common procedures of exposing children to the meaning of such verbs without making the connections explicit.

Of the twenty participants in this study, 11 children correctly identified new verbs taught. The remaining nine children's performance remained at chance. The overall pattern of learning was less robust than was expected at the outset of the study, and expected differences between the experimental Argument Structure and Storytelling conditions were not significant. However, the effect sizes associated with pre-post differences in performance on the target verbs were in the moderate range. There are both theoretical and practical considerations in understanding why children did and did not learn new verbs and the lack of difference between the teaching conditions. I begin by discussing the findings from a theoretical perspective and then consider some practical issues that may have affected performance on the experimental tasks and close with a discussion of design limitations and ways that future modifications to the experimental paradigm might help clarify some of the pending questions.

From a theoretical perspective, this study was designed considering both empiricist and nativist accounts of language acquisition, which is consistent with the notion people rely upon both an innately strong predisposition for language and its properties (Chomsky, 1981), along with our communicative experiences to become proficient language users (Tomasello, 2003). As a foundation for this study from the nativist perspective, the universal construct of argument structure was drawn upon to attempt to tap into natural learning in children (Bowerman & Brown, 2008). Across languages, basic argument structure for verbs is quite similar and can potentially help children connect knowledge across their two systems early in development. Based on this similarity it was assumed that bilingual children would be able to focus on the salience of argument structure as a reliable *cue* (MacWhinney, 2005; 2012) for learning by attending to the chunk of information associated with the target verbs. Utilizing argument structure as an accessible teaching tool seemed reasonable given the emphasis language theorists place on the ubiquity and salience of conceptual, syntactical (or *theta*) roles as described by linking rules (Pinker, 1991), constructions (Goldberg, 1995, 2006) and mapping principles (Lidz et al., 2003).

In considering the balance of children who did and did not demonstrate learning, several factors bear further consideration. Of the eleven participants who learned new verbs, there was no difference in performance between the Argument Structure Condition and the Storytelling Condition. This may be because children brought both foundational learning strategies and higher level learning strategies to the learning task along with their predisposition to attend to larger chunks. To solve the *Induction Problem*, (or to answer the question, "How in the world do people learn new words so quickly?) Hirsch-Pasek, Golinkoff and Hollich (2000) developed the *Lexical Principles Framework.* See Figure 5.

Figure 5: Lexical Principles Framework



The authors argue that there are lower level, or Tier 1 principles, that children must understand before being able to initially learn words. Tier 1 skills are very basic. For example, children must understand the *Reference Principle*, which dictates that a conventional word pronunciation can stand for something real in the world. We might consider that paying attention to argument structure might be a Tier 1 skill, since very young children notice it. In addition to the foundational Tier 1 principles, there are more advanced Tier 2 principles, such as the *Novel Name Nameless Principle*, which states that children will attach a new word they hear to an item for which they do not yet have a label. These principles help support children to fast map, to learn new words rapidly.

Because the participants in this study are already adept word learners (in their first language), they most likely know how to utilize Tier 2 principles to be efficient learners. By this rationale, children in both groups could draw upon higher level learning principles with the underlying understanding of argument structure. Two possibilities exist to explain why learning was the same in the two conditions. Either it might be that highlighting the argument structure was not necessary, as the participants would attend to it whether or not someone points it out. Or, it might be that children did not need to utilize argument structure to learn, as they could rely on higher learning principles. As for incorporating an understanding of *chunking* into the analysis, the argument structure chunks were presented equally in both conditions. It may have been the repeated chunking that drew children's attention to the lexical meaning of the new verbs regardless of the condition in which those chunks were presented.

This too would be consistent with the notion of attending to a more fine-grained level of representation, and not inconsistent with the lack of differences between the two teaching conditions. Furthermore, Tier 1 is most associated with the initial mapping of words which typically leverages awareness of the phonological system. For these learners, that there was not a significant correlation with non-word repetition suggests that specific attention to the phonological forms of the words was not the primary driver of learning.

This is in line with MacWhinney's observation that chunking of information is a key aspect of learning (2012). The size of the chunk that learners attend to is dependent on proficiency. Initially learners attend to larger chunks, but as they are able to process large chunks they may attend to smaller chunks. Thus, it is possible that though the children are in the early stages of English acquisition, they are no longer as attuned to some of the rudimentary approaches they used to learn their first language prior to having

developed lexical semantic representations, as evidenced by the observed correlation between PPVT scores and performance on the task.

Almost half of the children failed to perform above chance in the learning task, so it also important to consider why learning may not have occurred. While the Argument Structure Condition was designed to tap into children's awareness of language structure and salient chunks, a correlate emphasis on the empiricist based learning theories was not incorporated into the study; that is, children were not able to practice the chunks to gain efficiency, which is suggested as crucial for learning in work on *verb islands* (Tomasello, 2003) and use of verbs as *hubs* (Dollaghan, 2005). The nature of all the tasks, the pre- and posttest, as well as the stories and teaching in the two learning conditions, was receptive. Perhaps, if there had been an expressive component to the tasks (in both conditions), more participants would have learned new verbs, as they would have had the opportunity to utilize them as well as notice their linguistic properties passively. Future work might systematically incorporate production practice to evaluate the extent to which this increased learning.

In addition, from a study design perspective, it is possible that the activity format was insufficiently intense to support learning. Children younger than five are not as adept at learning verbs from Quick Incidental Leaning (QUIL) tasks as they are at learning nouns (Oetting, Rice, & Swank, 1995). Children with Specific Language Impairment (SLI) require a higher dosage for word learning than typical peers; they require 10 presentations per condition compared with 1-3 for children with typical language development (Rice, Oetting, Marquis, Bode, & Pae, 1994). While there were not language concerns about the participants based on their screening performance, because they were in the emergent stage of second language acquisition, they might have been more successful if they had heard more tokens of the verbs in each story presentation and if the language load had been lower.

The stories in this study contained 5 tokens each with robust linguistic content, while other experimental designs for fast mapping tasks have included up to 15 tokens (Brackenbury & Fey, 2003) and presented sparse linguistic content around the target words (Alt, Meyers & Figueroa, 2013).

Limitations and Implications

Subject Recruitment

The researcher's request through the Boulder Valley School District (BVSD) was initially approved, though changing leadership led to different permission parameters than granted in previous research studies once data collection was to begin. The researcher was only permitted to recruit children by posting flyers in local ELL designated schools. The district did not grant permission to utilize school property for data collection. As a result, only four children were recruited under the BVSD permission to conduct research. Those four children were seen in their homes for data collection, which was inefficient for gathering data in a timely fashion. The researcher was subsequently able to secure permission to conduct research from the Head Start program, where she worked as a Clinical Faculty member with graduate students from The University of Colorado.

While the first four participants were kindergartners, the subsequent sixteen participants were preschoolers. To align the subjects as closely as possible to each other in age, the sixteen preschoolers were seen during their last month of preschool. While the two treatment groups did not vary significantly from one another overall in age, a potential limitation of the study is that the first four participants had completed more schooling, thereby, having increased intellectual functioning, academic knowledge and potentially more overall exposure to English, though their percentage of English use did not vary from

the preschoolers significantly. Preschoolers may not have had the academic knowledge resources to respond to the structure of the task.

In addition, the treatment settings varied for the initial group of four and the remainder of the participants. The comfort level the children treated in their homes experienced might have led to better outcomes, or, that the setting was not as distraction free might have led to poorer outcomes on the learning task.

Treatment Sessions

One limitation of the study is that the children were administered tasks in different orders. As mentioned, the PI made judgement calls about the effectiveness of administering certain tasks, particularly the standardized tests, in each session based on factors such as scheduling challenges, child temperament and child behavioral attributes on the day of administration. This could have led to differences in performance in the tasks used to predict outcomes

There was also variation in how quickly the children completed the entire study protocol. The majority of the subjects completed the entire protocol within a 3 or 4-day period. Some participants received treatment administration up to a week apart, and their total duration in the study was up to 2 weeks. This could have impacted how the subjects responded to the pre- and posttest stimuli. This could have led to children who quickly completed the protocol benefitting more by recalling the warm up, high frequency verb task. On the other hand, the individuals who moved quickly from pre- to posttest might have been more primed to answer the same on test items at both times. To increase validity of the comprehension procedure, in future investigations the pre- and posttest would be best administered at least a week apart, so as to prevent repeated responses from memory, rather than allowing for new responses due to learning the verbs. It might also be

worthwhile to test all verbs as part of pre- and posttesting. Overall, the numerous aspects of this study that were highly variable between children, such as the time lapse from the beginning to the end of the protocol and administration in different settings could have impacted the results in different ways for the children and interrupted fidelity of the treatment.

Were this a traditional intervention study, it would have been important to complete the language measures (PPVT-4, BESA, NWR) prior to beginning the intervention. The proposal for this study presupposed that collecting this data during sessions would be appropriate, as it was to be used to describe participants' language knowledge at the time. Nonetheless, it is possible that the PI's clinical judgement in choosing when to implement the PPVT and the NWR could have resulted in changes in how the children reacted to the sessions in general. From a clinical standpoint children who seemed to have shyer temperaments would have been asked to complete the NWR task last, as it requires expressive output, and it is a novel task that can be overwhelming to children. Additionally, the PI would have made the choice to complete the PPVT later in the protocol due to children's obvious discomfort with English, or preference for Spanish. Furthermore, scheduling constraints from the school demanded certain tasks be administered at certain times, or more likely, not as many tasks could be completed as desired on some days. This kind of variability could have had some impact on the children's performances overall by affecting the child's interest or motivation. The PI might've incorrectly made subjective determinations that were in error, and the school scheduling could've interrupted the consistency of the presentation in unproductive ways. Furthermore, if children started with a vocabulary test rather than a syntax task, for example, this might have primed them differently for the study's task, which was vocabulary focused. It either might have highlighted certain words that were relevant to the study, or simply made them more adept

at completing vocabulary comprehension tasks. Moving forward with such a protocol would warrant more rigid scheduling, both in terms of length of study protocol and consistency of ordering. There were only three children who did not start with a vocabulary measure in the first sessions (participants 011, 019 and 020). One child did not respond correctly to any of the comprehension items, one responded accurately to three items on both pre- and posttest with no change, and the third child responded correctly to three new items. Completing a comprehension measure first might influence how well a child participated in the overall study protocol.

Comprehension Test Pre- and Posttest Validity and Reliability

Because the comprehension pre- and posttests were not video recorded nor were errors individually identified, the researcher cannot complete reliability checks for scoring or complete an error analysis. Knowing which choices children made in error might not have shed light on whether or not they utilized argument structure to learn because of similarities in the argument structure; however, if one foil was repeatedly picked, it could indicate that it disrupted a demonstration of learning due to its salience. An analysis of how many times each target verb was chosen throughout the study is summarized in Table 9.

Table 9: Total number of times (and percentage of total) that each target item was selected at pre and post test

	Chosen only at pretest (20 possible)	Chosen only at posttest (20 possible)	Chosen at pretest and post test (40 possible)	Total times selected (possible)
Devour	3 (15%)	8 (40%)	4 (10%)	15 (37.5%)
Scrub	1 (5%)	9 (45%)	4 (10%)	14 (35%)
Repair	0 (0%)	6 (30%)	0 (0%)	6 (15%)
Damage	2 (10%)	6 (30%)	2 (5%)	10 (25%)
Gulp	0 (0%)	10 (50%)	4 (10%)	14 (35%)
Sketch	0 (0%)	7 (35%)	1 (2.5%)	8 (20%)
Total	6	46	15	67

There were some strengths of the pre- and posttest stimuli items that should help counteract concerns around salience. 1) The target verbs were illustrated by different animals completing the action with different materials from the treatment stimuli, 2) no two pictures were used twice in the foils, and 3) two five-year old children, one monolingual and one bilingual expressively generated the *low frequency* verb for the target verb stimuli without cues. Limitations of the stimuli are that 1) none of the foils were tested in piloting for comprehension or expression, and 2) the foils weren't balanced in terms of

transitivity. In other words, while the picture of the horse on the phone could be interpreted as *calling* someone, it also might be interpreted as an intransitive construction (i.e. *talking*).

Another possible limitation of both the treatment stimuli and the comprehension test stimuli might be that the pictures are a static representation of a dynamic action, a verb. However, children as young as two years of age were able to discern the difference between a passive motion and a forced action in a static picture that looked the same and only differed by being labeled as an intransitive or transitive activity (Fernandes, 2006). This suggests that children are sensitive to learning about action in static pictures, particularly if they can focus on multiple agents in action, such as they are in the transitive constructions taught in this study.

To ensure that the target pictures were clear, two non-participating children labeled the high frequency target in each with 100% accuracy. It may have been useful to conduct additional piloting of the full comprehension tests and treatment procedures on monolingual English speaking children to ensure that children of the same age were successful learning the test targets and that the identified the desired high frequency foils correctly. To have demonstrated learning in monolingual English children from pretest to posttest with the target pictures would have lent validity to the procedure and ensured that the pictures were balanced stimuli.

Theoretical Limitations and Implications

In addition to the challenges in recruiting and ways the tasks were administered, there are several features of the experimental task that may have affected learning and bear additional examination. One key difference between the Storytelling condition and the Argument Structure condition is the extent to which the key variables were made overt in the script. Children were told that they were learning new but the arguments and their theta

roles were not explicitly identified in conjunction with the verbs. It is the sensitivity to theta roles that is evidenced in very young children (Fernandes et al., 2006). The roles and the structure were only implicitly instructed, while the explicit instruction focused singularly on the lexical equivalents of the low and high frequency verbs. In addition, the pre- and posttest prompts only included the infinitival construction, thereby not providing the children any kind of argument structure information by which to make decisions about word meaning. They had to rely on only the lexical information and the phonological code. The plates also were not counterbalanced for different kind of transitivity, so children could not use powers of deduction based on argument structure knowledge to demonstrate word understanding. To address questions around the explicit nature of teaching the script would need to be further developed to make it more explicit around the theta roles associated with the argument structure. The foils might need to be further developed so that alternate choices would give more information about what children thought when they chose something other than the target.

Implications

For children who learned, utilizing argument structure was as on par with general story telling based presentations. One pending question is the language learning level at which specific linguistic information is most salient. It is unclear if an argument structure chunk might be the most salient cue or if it is still too hard, given that children who had the most English vocabulary did the best.

Most of the children in the study had been functionally monolingual Spanish up until preschool, and at the time of the study, only three of the participants spoke English more than 40% of the time. The average amount of time the participants spoke English during the week was 23%. This could mean the children were not able to leverage

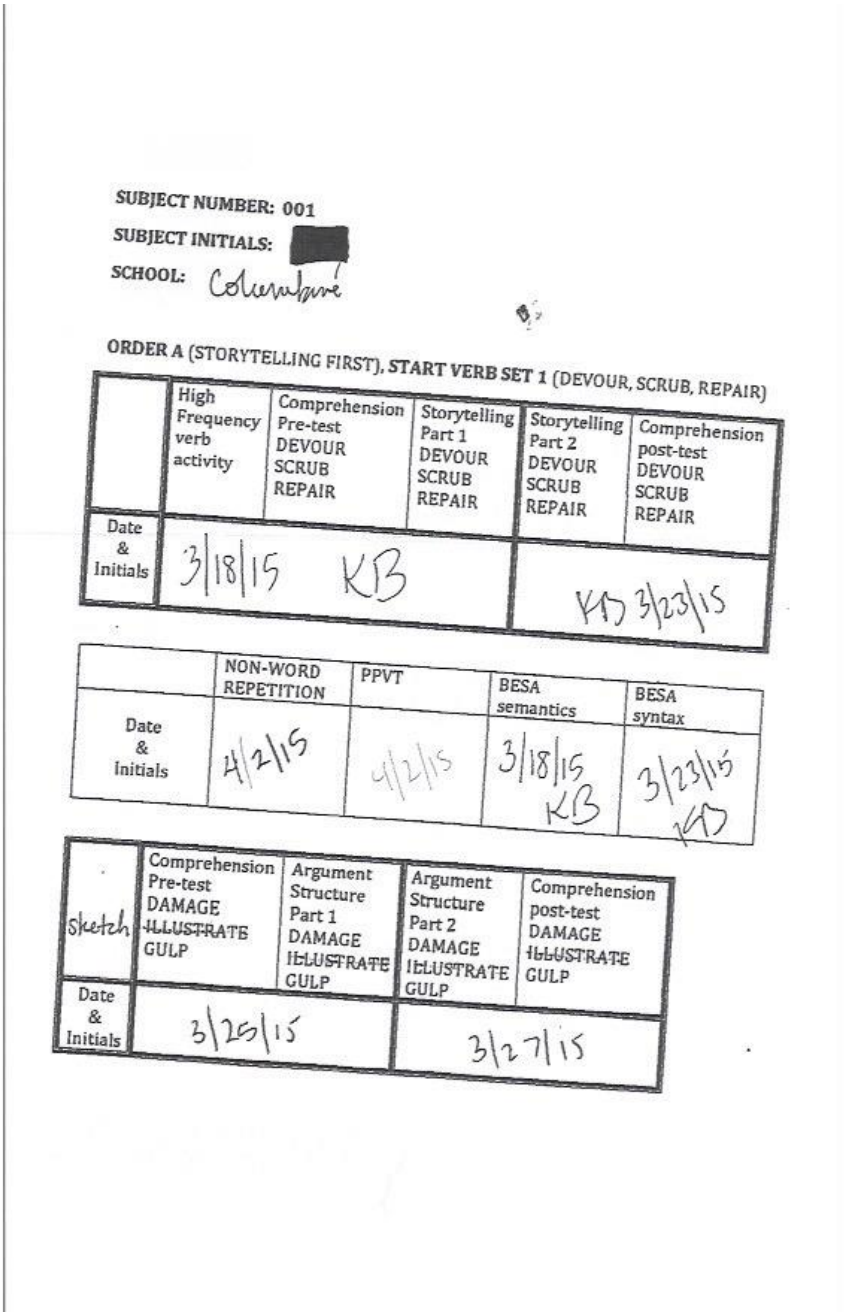
themselves into English verb learning in the treatment activities presented, as they did not have foundational English language skills. This is further supported by the lack of correlation between the percentage of English used by the participants and verb learning. We know that the best predictor of a bilingual child's dominance in early childhood is the child's current weekly language use (Bedore et al., 2012), and of the twenty participants, only one was speaking Spanish and English with equal proportion during the week. Only two participants in the study were using English more than 30% of the week. It may be that for children who have not yet switched their dominance to English in terms of daily use, utilizing either of these tasks is not effective for teaching new vocabulary. While the PPVT scores do not reflect any measure of dominance, they do suggest a certain degree of English proficiency, at least in the semantics domain. A more developed semantic network supports children learning the meaning of new words from storybook exposure and direct instruction better (Cain, Oakhill, & Lemmon, 2004; Ewers & Brownson, 1999).

Testing children who have more English, incorporating expressive practice or systematically conducting this work later in the second language acquisition process might help disambiguate the question about the effectiveness of the tasks in terms of linguistic load and in terms of usage-based theories of language learning (Tomasello, 2003). Further exploring the extent to which a very explicit script and/or animated or video input, as well as how increasing the dosage could facilitate learning might also be important steps in understanding how to structure language input. ELLs are at greater risk than their peers of having poor literacy and associated educational difficulties. Continuing to test teaching approaches that can be delivered by teachers or paraprofessionals is a powerful tool in supporting children's learning and reducing referral to special education.

Appendices

Appendix A: Subject folder insert tracking and recording forms

Subject 001



SUBJECT NUMBER: 001

SUBJECT INITIALS: [redacted]

SCHOOL: Columbine

ORDER A (STORYTELLING FIRST), START VERB SET 1 (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	3/18/15 KB			KB 3/23/15	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	4/2/15	4/2/15	3/18/15 KB	3/23/15 KB

	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP	Argument Structure Part 1 DAMAGE ~~ILLUSTRATE~~ GULP	Argument Structure Part 2 DAMAGE ~~ILLUSTRATE~~ GULP	Comprehension post-test DAMAGE ~~ILLUSTRATE~~ GULP
Sketch				
Date & Initials	3/25/15		3/27/15	

Subject D01

Date: 3/18/15

Devour	0
Scrub	0
Repair	0

[redacted]

Date: 3/23/15

Devour	
Scrub	
Repair	

Date: 3/18/15

Damage	1
Sketch	0
Gulp	1

Date: Pretest

Damage	1
Sketch	0
Gulp	0

getting

drawing

Post

damage	1
sketch	0
gulp	1

Subject 002

SUBJECT NUMBER: 002

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER A (STORYTELLING FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/23/17 KB		5/24/17 KB	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/23/17 KB	5/24/17 KB	5/23/17 KB	5/23/17 KB

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/24/17 KB		5/25/17 KB	

Subject 002

Date:

Devour	–	–	
Scrub	+	+	
Repair	–	–	

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date:

Damage	–	–	
Sketch	–	–	
Gulp	–	+	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage			
Sketch			
Gulp			

Subject 003

SUBJECT NUMBER: 003

SUBJECT INITIALS: [redacted]

SCHOOL: Whittier

ORDER A (STORYTELLING FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	3/20 Kaiw			3/23 Kaiw	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	4/3	4/4	3/20 Kaiw	3/23 Kaiw

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	4/3		4/4 Kaiw	

Subject 003

Date: 3/20/15

Devour	0
Scrub	0
Repair	0

Date: 3/23/15

Devour	0
Scrub	0
Repair	1

Date:

Damage	1
Sketch	1
Gulp	1

Date:

Damage	1
Sketch	1
Gulp	1

Subject 004

Shane week 7×5=35
Shane weekend 11×2=22

SUBJECT NUMBER: 004

SUBJECT INITIALS: Wilderness

SCHOOL: [redacted] d.o.b. [redacted]

97 total 77 Sp 20 E/S school Sps total

Sp 4×5=20
Em 4×5=20

ORDER A (STORYTELLING FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR + SCRUB – REPAIR –	Storytelling Part 1 DEVOUR – SCRUB + REPAIR –	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/15/18			5/16/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/15/18	5/16/18	5/15/18	5/15/18

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/16/18		5/17/18	

Subject 0 0 4

Date:

Devour	+	−	
Scrub	−	+	
Repair	−	−	

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date:

Damage	−	−	
Sketch	−	−	
Gulp	−	−	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

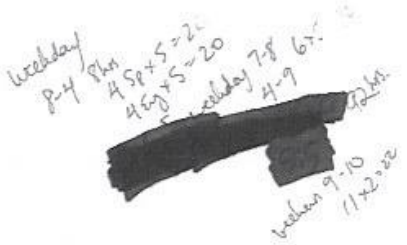
Damage			
Sketch			
Gulp			

Subject 005

SUBJECT NUMBER: 005

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness



ORDER A (STORYTELLING FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR – SCRUB + REPAIR –	Storytelling Part 1 DEVOUR – SCRUB + REPAIR –	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/21/18		5/22/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/21/18	5/22/18	5/21/18	5/21/18

	Comprehension Pre-test DAMAGE - ~~ILLUSTRATE~~ – GULP -	Argument Structure Part 1 DAMAGE - ILLUSTRATE – GULP –	Argument Structure Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/22/18		5/24/18	

Subject D05

Date:

Devour	−	−	
Scrub	+	+	
Repair	−	−	

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date:

Damage	−	−	
Sketch	−	−	
Gulp	−	−	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage			
Sketch			
Gulp			

Subject 006

SUBJECT NUMBER: 006

SUBJECT INITIALS: [redacted]

SCHOOL: Columbia

ORDER B (ARGUMENT STRUCTURE TASK FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	3/19/15 KB			3/23/15	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	4/16/15	4/7/15	3/19/15 KB	3/23/15 Kari

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	4/7/15		4/16/15	

Subject 006

Date: 3/19/15

Devour	0
Scrub	1
Repair	0

[redacted]

Date:

Devour	
Scrub	0
Repair	

Date:

Damage	0
Sketch	0
Gulp	1

Date:

Damage	0
Sketch	0
Gulp	1

tornado feta –

Subject 007

SUBJECT NUMBER: 007

SUBJECT INITIALS: [redacted]

SCHOOL: Columbine

ORDER B (ARGUMENT STRUCTURE TASK FIRST), START VERB SET 1 (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/1/15 KB		5/7/15 KB	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/7/15	5/28/15	5/1/15	5/7/15

	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP Sketch	Storytelling Part 1 DAMAGE ~~ILLUSTRATE~~ GULP	Storytelling Part 2 DAMAGE ~~ILLUSTRATE~~ GULP	Comprehension post-test DAMAGE ~~ILLUSTRATE~~ GULP
Date & Initials	KB 5/14/15		KB 5/28/15	

Subject 007

Date: 5/1/15

Devour	−
Scrub	−
Repair	−

Date: 5/7/15

Devour	±
Scrub	+
Repair	−

Date: 5/14/15

Damage	−
Sketch	−
Gulp	−

Date: 5/28/15

Damage	±
Sketch	−
Gulp	−

Subject 008

SUBJECT NUMBER: 008

SUBJECT INITIALS: [redacted]

SCHOOL: Wilder

Sp weekend 7-9 =12 ×2=24
Sp weekday 7-8 6×5=30
4-9
5/22/13
5:0
Sp 74-79%. 94 total
Eng 4×5=20
Sp 4×5=20

ORDER B (ARGUMENT STRUCTURE TASK FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR+ SCRUB − REPAIR −	Argument Structure Part 1 DEVOUR + SCRUB + REPAIR+	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/21/18		5/22/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/21/18	5/22/18	5/21/18	5/21/18

	Comprehension Pre-test DAMAGE − ~~ILLUSTRATE~~ - GULP −	Storytelling Part 1 DAMAGE + ILLUSTRATE GULP +	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/22/18		5/24/18	

Subject 008

Date:

Devour	+		
Scrub	−		
Repair	−		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	+		
Scrub	+		
Repair	+		

Date:

Damage	−	+	
Sketch	−	+	
Gulp	−	+	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage			
Sketch			
Gulp			

Subject 009

SUBJECT NUMBER: 009

SUBJECT INITIALS: [redacted]

SCHOOL: Woodland

ORDER B (ARGUMENT STRUCTURE TASK FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/17/17 KB			5/19/17 KB

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/22/17	5/19/17	KB 5/17/17	KB 5/17/17

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/19/17 KB		KB 5/22/17	

Subject 009

Date: 5/17/17

Devour	–		
Scrub	=		
Repair	–		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date: 5/22/17

Devour	–		
Scrub	=		
Repair	–		

Date: 5/19/17

Damage	+		
Sketch	–		
Gulp	=		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date: 5/22

Damage	–		
Sketch	=		
Gulp	–		

Subject 010

SUBJECT NUMBER: 010

SUBJECT INITIALS: [redacted]

SCHOOL: Woodlands

ORDER B (ARGUMENT STRUCTURE TASK FIRST), **START VERB SET 1** (DEVOUR, SCRUB, REPAIR)

	High Frequency verb activity	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/17/17 KB			5/19/17	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/22/17	5/22/17	5/17/17	5/22/17

	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/19/17		5/22/17	

Subject 010

Date:

Devour			
Scrub			
Repair			

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

post

Devour			
Scrub			
Repair			

Date:

Damage			
Sketch			
Gulp			

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage			
Sketch			
Gulp			

Subject 011

SUBJECT NUMBER: 011

SUBJECT INITIALS: [redacted]

SCHOOL: Woodlands

ORDER A (STORYTELLING FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/17/17 KB		5/17/17		5/19

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/16/17	5/19/17	5/17/17 KB	5/17/17

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/19/17		5/22/17	

Subject 011

Date: 5/17/17 Pre Test

Devour	—		
Scrub	—		
Repair	—		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date: Post Test

Devour	—		
Scrub	—		
Repair	—		

Date: 5/17/17 Pre Test

Damage	—		
Sketch	—		
Gulp	—		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date: Post Test 5/22/17

Damage	—		
Sketch	—		
Gulp	—		

Subject 012

SUBJECT NUMBER: 012

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

[redacted] one of the youngest

ORDER A (STORYTELLING FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE – ILLUSTRATE – GULP –	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE – ILLUSTRATE GULP –	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials		5/16/18		5/17/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/16/18	5/17/18	5/16/18	5/16/18

	Comprehension Pre-test DEVOUR – SCRUB – REPAIR –	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR – SCRUB – REPAIR –	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/17/18		5/21/18	

Subject 012

Date:

Devour	—	—	
Scrub	—	—	
Repair	—	—	

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date:

Damage			
Sketch			
Gulp			

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	—	—	
Sketch	—	—	
Gulp	—	—	

[redacted]

SUBJECT NUMBER: 013

SUBJECT INITIAL: [redacted]

SCHOOL: Wilderness

ORDER A (STORYTELLING FIRST). START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE – ~~ILLUSTRATE~~ sticker – GULP – – –	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE – ILLUSTRATE GULP –	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials		5/8/18		5/9/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/9/18	5/9/18	5/8/18	5/8/18

	Comprehension Pre-test DEVOUR + SCRUB – REPAIR –	Argument Structure Part 1 DEVOUR + SCRUB – REPAIR –	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/9/18		5/10/18	

Subject 013

Date:

Devour	+		
Scrub	−		
Repair	−		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	+		
Scrub	−		
Repair	−		

Date:

Damage	−		
Sketch	−		
Gulp	−		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	−		
Sketch	+		
Gulp	−		

Subject 014

[redacted]

SUBJECT NUMBER: 014

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER A (STORYTELLING FIRST), **START VERB SET 2** (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE — ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ~~ILLUSTRATE~~ GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials		5/18/18		5/21/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/18/18	5/21/18	5/18/18	5/18/18

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/21/18		5/22/18	

Subject 0 1 A

Date:

Devour	—		
Scrub	—		
Repair	—		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	+		
Scrub	—		
Repair	—		

Date:

Damage	—		
Sketch	—		
Gulp	—		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	—		
Sketch	+		
Gulp	+		

Subject 15

SUBJECT NUMBER: 015

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER A (STORYTELLING FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ILLUSTRATE GULP	Storytelling Part 1 DAMAGE ILLUSTRATE GULP	Storytelling Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials	5/23/17 KB			5/24/17 KB	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/23/17 KB	5/24/17	5/23/17 KB	5/23/17 KB

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Argument Structure Part 1 DEVOUR SCRUB REPAIR	Argument Structure Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/24/17		5/25/17 KB	

Subject 015

Date:

Devour	–		
Scrub	–		
Repair	–		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	+		
Scrub	+		
Repair	–		

Date: 5/23/17

Damage	–	+	
Sketch	–	+	
Gulp	–	+	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	–		
Sketch	–		
Gulp	+		

Subject 016

SUBJECT NUMBER: 016

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness HS.

ORDER B (ARGUMENT STRUC. FIRST), **START VERB SET 2** (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Comprehension post-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH
Date & Initials	5/23/17 KB			5/24/17	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/23/17 KB	5/24/17 KB	5/23/17 KB	5/23/17 KB

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/24/17 KB		5/25/17 KB	

Subject 016

Date:

Devour	—		
Scrub	—		
Repair	~		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub	—		
Repair	~		

Date: 5/23/17 Pretest

Damage	+		
Sketch	—		
Gulp	+		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	—		
Sketch	+		
Gulp	+		

Subject 017

Sp .59
Eng .41

SUBJECT NUMBER: 017 [redacted]

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER B (ARGUMENT STRUC. FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Comprehension post-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH
Date & Initials		5/15/18		5/16/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/15/18	5/16/18	5/15/18	5/15/18

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/16/18		5/21/18	

Subject 017

Date:

Devour	+		
Scrub	=		
Repair	=		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	=		
Scrub	+		
Repair	+		

Date:

Damage	=		
Sketch	=		
Gulp	=		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

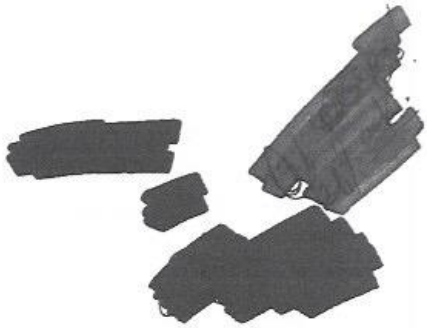
Date:

Damage	=		
Sketch	=		
Gulp	+		

SUBJECT NUMBER: 016

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness Ahave



ORDER B (ARGUMENT STRUC. FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP – SKETCH	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Comprehension post-test DAMAGE – ~~ILLUSTRATE~~ + GULP – SKETCH
Date & Initials		5/8/18		5/9/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/8/18	5/8/18	5/9/18	5/9/18

	Comprehension Pre-test DEVOUR + SCRUB – REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR – SCRUB – REPAIR –
Date & Initials	5/9/18		5/10/18	

Subject 018

Date:

Devour	+		
Scrub	~		
Repair	—		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	—		
Scrub	—		
Repair	—		

Date:

Damage	—		
Sketch	—		
Gulp	—		

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	—		
Sketch	+		
Gulp	—		

Subject 019

SUBJECT NUMBER: 019

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER B (ARGUMENT STRUC. FIRST), START VERB SET 2 (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ~~ILLUSTRATE~~ GULP SKETCH	Comprehension post-test DAMAGE ~~ILLUSTRATE~~ GULP SKETCH
Date & Initials		5/8/18 KB		5/9/18 KB	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	12/4/17 KB redone 5/9/18 KB	5/9/18	5/9/18 KB	5/9/18 KB

	Comprehension Pre-test DEVOUR SCRUB REPAIR	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR SCRUB REPAIR	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials		5/9/18 KB		5/10/18

Subject 019

Date: 5/9/18

Devour	+	+	
Scrub	+	+	
Repair	—	—	

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date: 5/9/18

Damage	—	—	
Sketch	—	—	
Gulp	+	+	

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage			
Sketch			
Gulp			

Subject 020

SUBJECT NUMBER: 020

SUBJECT INITIALS: [redacted]

SCHOOL: Wilderness

ORDER B (ARGUMENT STRUC. FIRST), **START VERB SET 2** (DAMAGE, ILLUSTRATE, GULP)

	High Frequency verb activity	Comprehension Pre-test DAMAGE + ILLUSTRATE + GULP −	Argument Structure Part 1 DAMAGE ILLUSTRATE GULP	Argument Structure Part 2 DAMAGE ILLUSTRATE GULP	Comprehension post-test DAMAGE ILLUSTRATE GULP
Date & Initials		5/17/18		5/21/18	

	NON-WORD REPETITION	PPVT	BESA semantics	BESA syntax
Date & Initials	5/17/18	5/17/18	5/21/18	5/21/18

	Comprehension Pre-test DEVOUR − SCRUB + REPAIR −	Storytelling Part 1 DEVOUR SCRUB REPAIR	Storytelling Part 2 DEVOUR − SCRUB + REPAIR +	Comprehension post-test DEVOUR SCRUB REPAIR
Date & Initials	5/21/18		5/22/18	

Subject 020

Date:

Devour	−		
Scrub	+		
Repair	−		

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour	−		
Scrub	+		
Repair	+		

Date:

Damage	—		
Sketch	—		
Gulp	—		

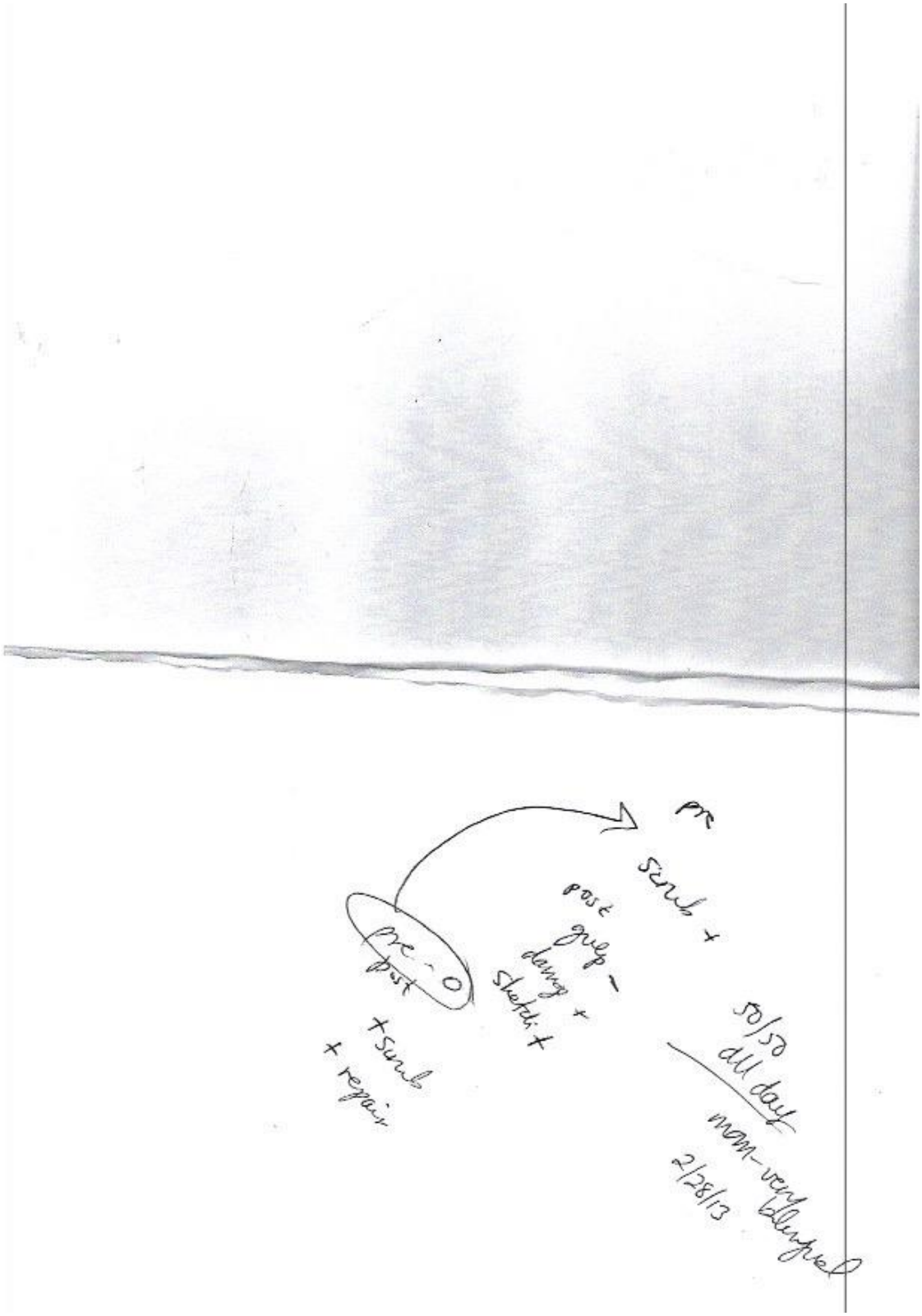
Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

Damage	+		
Sketch	+		
Gulp	—		


pre
scrub +
post
grasp −
damage +
sketch +
pre - O
post
+ scrub
+ repair
50/50
dull day
mom-very talkative
2/28/13

Appendix B: Pre- and posttest comprehension test items

	Look at all of the pictures. (Point to each picture once.) "Show me *to gulp.*"
	Look at all of the pictures. (Point to each picture once.) "Show me *to damage.*"
	Look at all of the pictures. (Point to each picture once.) "Show me *to devour.*"
	Look at all of the pictures. (Point to each picture once.) "Show me *to scrub.*"
	Look at all of the pictures. (Point to each picture once.) "Show me *to sketch.*"
	Look at all of the pictures. (Point to each picture once.) "Show me *to repair.*"

Appendix C: Low frequency verb activity scripts

DAMAGE

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Cat Who Walked on Tables". There once was a curious cat who wanted to know what was on top of the kitchen table. When he jumped up onto the table, he accidentally bumped into a candle and knocked it into pieces. He didn't mean to damage the pretty candle. He tried to put it back together again, but while he was doing that bumped into a flower, which fell apart. He didn't mean to damage the flower either! He also didn't want to damage the pot that was on the table. He put everything back together, and then he thought to himself, I just have to be more careful not to damage these beautiful decorations on the table! So he decided to walk slowly on his tiptoes, and now he is not damaging any decorations anymore. The cat loves the decorations on the table, so he is happy he is not damaging them.	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of a cat who is accidentally breaking decorations on a table, but instead of saying the word, "break", we are going to use a new word. We can say, "Here the cat didn't mean to break the candle." Or we can say, "Here the cat didn't mean to damage the candle!" Here we see that the cat bumped into a flower too, but he didn't want to damage it. It did fall apart. Here, we can say he didn't; mean to break the pot, or we can say he didn't mean to damage the pot. We can make the same kind of sentence. Now the cat is only walking on tip toes, so she is not damaging anything anymore! She likes the table decorations, so she is glad she is being careful and is not damaging them!

DEVOUR

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Alligator Who Loved Most Jellybeans". One day, an alligator found a big bowl of jellybeans. He didn't know what they were, so he took one yellow jellybean out of the bowl and he smelled it. Yum. The yellow one smelled sweet. He decided to devour all the yellow jellybeans. Next he took out a red jellybean and he smelled it. Yum. The red one smelled sweet too. The alligator decided to devour all the red jellybeans. Next, the alligator took out a green jellybean and smelled it. Yum. The green one smelled sweet too! He decided to devour all the green jellybeans. The next jellybean the alligator took out was brown. It smelled sweet like the other jellybeans, but when he was devouring all the brown jellybeans, he noticed they tasted like coffee. Ew! They were not sweet! He decided not to devour the brown ones. Now, the alligator is not devouring brown jellybeans anymore!	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of an alligator who is eating lots of jellybeans, but instead of saying the word, "eat", we are going to use a new word. We can say, "Here the alligator decided to eat all the jellybeans." Or we can say, "Here the alligator decided to devour all the yellow jellybeans!" He likes them because they are sweet. Here the alligator decided to devour all the red jellybeans. They are sweet too. Here, we can say he decided to eat the green jellybeans, or we can say he decided to devour the green jellybeans. We can make the same kind of sentence. Here, the alligator was devouring the brown jellybeans, but they tasted like coffee! Ew! Do you think the alligator likes to devour brown jellybeans anymore? No he is not devouring brown jellybeans ever again!

REPAIR

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Elephant with Clumsy Feet". Once upon a time, there was a big elephant who stepped on all her toys. They crumbled into pieces, so she decided to repair. The first toy she decided to repair was a broken boat. She worked all night with her glue, and finally it was back in one piece! Next she grabbed her pencil, which was in two pieces. She had to repair it with tape, since glue wouldn't work. The tape held it together so she could write with it again! But how was she going to repair her broken glass? It was in so many pieces? She tried and tried to get it back together again, but the glass made little scratches in her big elephant paws. Her paws hurt so much when she walked around now. She decided it is not a good idea to try repairing sharp and pointy toys. Now she is repairing only her soft and squishy toys. Those don't hurt her paws at all!	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of an elephant who is fixing his broken toys. Instead of saying the word, "fix", we are going to use a new word. We can say, "Here the elephant sat down to fix her toys." Or we can say, "Here the elephant sat down to repair her toys." First she decided to repair her broken boat. Next she picked up her broken pencil. Here, we can say she wanted to fix her pencil, or we can say she wanted to repair the pencil. We can make the same kind of sentence. Here, the elephant is repairing a broken glass, but the glass is scratching her paws. She realized that you have to be really careful to repair sharp and point toys, so you don't get hurt Now she does not spend time repairing toys that are sharp and pointy, just her toys that are soft and squishy. They don't hurt at all!

GULP

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Dog With The Biggest Bowl of Water". There once was a dog who loved water. His family left him the biggest bowl of water on the floor, so he was able to gulp it down. One night before bed, he bent down to gulp his water, and he did it so fast that he spilled the water over the floor! He didn't want to spill his water again, so the next night, when he started to gulp his water, he stuck his whole head into the bowl, but he breathed in so deep that the water went up his nose too! This made him cough and cough. On the third night, the dog thought to himself, "I had a hard time with my water the last two nights. I should try something different." He decided not to gulp his water, but to sip it slowly. The water didn't spill and didn't go up his nose, so from then on, he knew that gulping was not the best way to fill his stomach with water. From then on, he was not gulping his water so fast.	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of a thirsty dog who likes to drink water really fast. Instead of saying the word, "drink", we are going to use a new word. We can say, "Here the dog likes to drink his water." Or we can say, "Here the dog likes to gulp his water!" In this picture, the dog walks up to his bowl to gulp his water, but does it so fast that he spills the water. Here the dog decides to gulp it again, but he breathes it into his nose too! That makes him cough. He is having all kinds of problems! Now we can say that the dog learns not to drink his water too fast, or we can say that he decides not to gulp his water. We can make the same kind of sentence. From now on the dog is not gulping his water, because he knows that gulping causes lots of problems.

SCRUB

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Lion With the Super Clean Plate". One night, the lion picked up all the dinner plates from the table. She picked up her mom's plate first and took it to the sink to scrub it. All of the food came off easily. Next the lion picked up her dad's plate to scrub. Her dad's plate was messier, but she finally got all the food off. When the lion picked up her own plate, she saw it was the messiest of all, so she knew she would have to scrub it the most. She worked so hard to get it clean that even the decorations on the plate came off! Her little brother said, "I sure don't want you to scrub my plate! I don't want the decorations to come off it!" Now, whenever it is the lion's turn to do dishes, she makes sure that she is scrubbing softly so that she doesn't clean the decorations off while she is scrubbing.	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of a lion who is washing his family's dinner plates. Instead of saying the word, "wash", we are going to use a new word. We can say, "Here the lion decided to wash all the plates." Or we can say, "Here the lion decided to scrub all the plates!" She made sure to get all the food off the plates. Here she didn't have to scrub too hard to get the food off her mom's plate. Here, we can say she had to clean the plate, or we can say she had to scrub the plate. We can make the same kind of sentence. Here, the lion is scrubbing the plate so hard that the decorations come off the plate! The lion's brother said, "I don't want you bu off my decorations! Do you think the lion is more careful now when she is scrubbing the dishes? Yes. She wants the decorations to stay on, so she cleans gently.

SKETCH

Storytelling Condition	Argument Structure Teaching Condition
This story is called, "The Fox with Colored Pencils" There once was a fox who carried his colored pencils with him everywhere he went. He did this because he liked to sketch everything he saw. One day, while he was walking to the park, he stopped for a few minutes to sketch his favorite tree. When he got to park, he noticed how the slide looped in circles, and he decided to sketch that loopy slide! He realized he wanted to go down that slide, and so he did! But when he was zipping around one of the loops, his pencils flew out of his bag and landed on the dirty, sandy ground. The fox picked the pencils up, but he realized it was hard to sketch with them when they were dirty. Now he makes sure that when he is sketching, his pencils are very clean! And when he is sketching he is always standing on the ground on his two feet, not twirling around a loopy slide!	We are going to learn some new words today using words we already know to help us. We are going to look at some pictures of a fox who likes to draw pictures with colored pencils, but instead of saying the word, "draw", we are going to use a new word. We can say, "Here the fox decided to draw the tree." Or we can say, "Here the fox decided to sketch the tree!" Here the fox brings his pencils to the park to sketch a slide. When he is finished, he goes down the slide but drops his pencils in the dirt. This makes the colored pencils hard to use to sketch pictures. Here, we can say the dirty, colored pencils don't work to draw pictures, or we can say the dirty colored pencils don't work to sketch pictures. We can make the same kind of sentence. Now the fox makes sure he is sketching only while he is standing still. That way he always is sketching with clean pencils.

Appendix D: Comprehension test response record example for first four subjects

Subject __ __ __

Date:

Devour	
Scrub	
Repair	

Date:

Devour	
Scrub	
Repair	

Date:

Damage	
Sketch	
Gulp	

Date:

Damage	
Sketch	
Gulp	

Appendix E: Comprehension test response record example for remaining subjects

Subject ___ ___ ___

Date:

Devour			
Scrub			
Repair			

Is this denying, devouring or completing?

Is this scrubbing, affecting or scrambling?

Is the battling, relying or repairing?

Date:

Devour			
Scrub			
Repair			

Date:

Damage			
Sketch			
Gulp			

Is this dangling, damaging or presenting?

Is this sketching, revealing or skipping?

Is this humming, gushing or gulping?

Date:

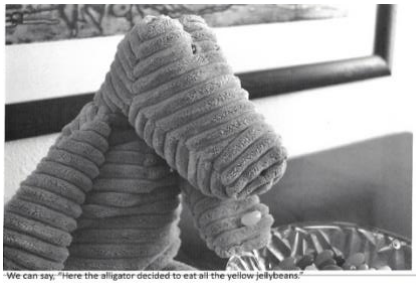
Damage			
Sketch			
Gulp			

Appendix F: Example of Argument Structure Treatment: Devour

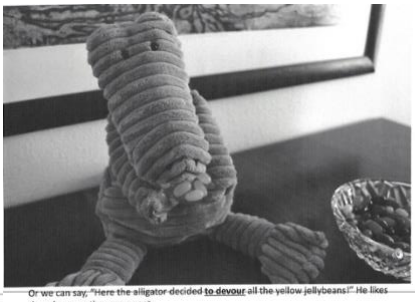
The Alligator Who Liked Most Jellybeans

We are going to learn some new words today using words we already know to help us.

We are going to look at some pictures of an alligator who is eating lots of jellybeans, but instead of saying the word, "eat", we are going to use a new word.

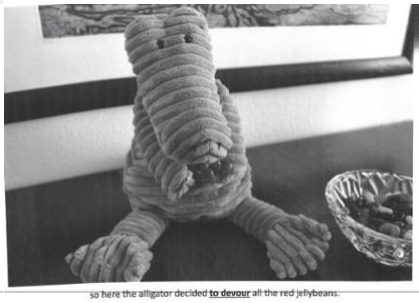


We can say, "Here the alligator decided to eat all the yellow jellybeans."



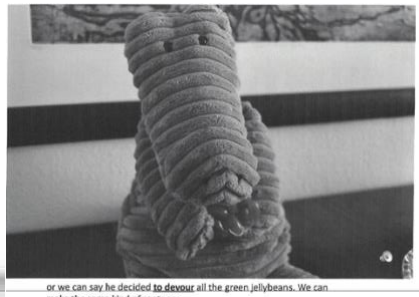
Or we can say, "Here the alligator decided **to devour** all the yellow jellybeans!" He likes them because they are sweet.

The red ones are sweet too



so here the alligator decided **to devour** all the red jellybeans.

Here, we can say he decided to eat all the green jellybeans.



or we can say he decided **to devour** all the green jellybeans. We can make the same kind of sentence.

Here, the alligator **was devouring** the brown jellybeans, but they tasted like coffee!

Ew! They were not sweet! They taste yucky. Do you think the alligator likes **to devour** brown jellybeans anymore?

No he **is not devouring** brown jellybeans ever again!

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